Integration of Globally Harmonized System (GHS)

into the Army Hazard Communication Program

GHS12-01

Terminal Learning Objective

Action – Integrate the GHS into Army Hazard Communication.

Condition – Given the GHS Purple Book and 29 CFR 1910.1200.

Standard – Integration must be completed in accordance with regulatory guidance and implementation dates.

Lesson Data

- Safety Requirements – None
- Risk Assessment – Low
- Environmental Considerations – None
- Evaluation – None

Overview

- Introduction/Background
- Three Categories of Hazards
- Safety Data Sheets (SDS)
- Labeling

Hazard Communication and GHS

- The GHS is an acronym for the Globally Harmonized System of Classification and Labeling of Chemicals.
- The elements in the GHS meet the basic requirement of any hazard communication system, which is to decide if the chemical hazardous, and to prepare a label and/or Safety Data Sheet (SDS) as appropriate.
- The U.S. will incorporate GHS through OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

Phase-in Period for GHS into Hazard Communication Standard

Effective Completion Date	Requirement(s)	Who
December 1, 2013	Train employees on the new label elements and SDS format.	Employers
June 1, 2015 December 1, 2015	Comply with all modified provisions of this final rule, except: Distributors may ship products labeled by manufacturers under the old system until December 1, 2015.	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition Period	Comply with either 29 CFR 1910.1200 (this final standard), or the current standard, or both.	All chemical manufacturers, importers, distributors and employers

Phase-in Period for GHS into Hazard Communication Standard

- By December 1, 2013, all Soldiers, Army civilians and embedded contractors, must be trained on the new label elements and SDS format.
- By June 1, 2016, all Army organizations will be required to have integrated GHS into their existing Hazard Communication program and must have:
  - Completed transition to new workplace labeling,
  - Made sure SDSs are available on every chemical and have replaced all existing MSDS sheets, and
  - Have provided additional employee training for newly identified physical or health hazards.

1910.1200 Hazard Communication Standard for General Industry (Before GHS)

Requires an employer to:

1. Have a written hazard communication program.

2. Have each hazardous chemical in the workplace appropriately labeled.

3. Have a Material Safety Data Sheet (MSDS) for each hazardous chemical in the workplace.

4. Train his/her employees about the hazards associated with and precautionary measures required for each hazardous chemical in the workplace. Training is required initially and anytime a new hazardous chemical is introduced into the workplace.

How does GHS change Hazard Communication at my installation?

1. “Hazard Classification” rather than “hazard determination”.

2. “Safety data sheet” (rather than “material safety data sheet”) uses a 16-section format.

3. Labels are more defined with specific requirements.

Note: Because the U.S. Army adopted OSHA standards (see AR 385-10, 16-2, Policy), it is required to meet the implementation/integration dates.

The Scope of the GHS

- Covers all hazardous chemical substances, dilute solutions and mixtures.
- Pharmaceuticals, food additives, cosmetics and pesticide residues in food, will not be covered at the point of consumer/end user.

What are GHS Hazards?

The categories of hazards are:

- Physical
- Health
- Environmental (non-mandatory)

Note: Hazards Not Otherwise Classified (HNOC) by GHS are required to be included on SDS (section 2), and will be addressed in employee training.

GHS Physical Hazards

Physical Hazards:

- Explosives
- Flammable Gases
- Flammable Aerosols
- Oxidizing Gases
- Gases Under Pressure
- Flammable Liquids
- Flammable Solids
- Self-Reactive Substances
- Pyrophoric Liquids

continued

GHS Physical Hazards *continued*

Physical Hazards:

- Pyrophoric Solids
- Self-Heating Substances
- Substances which, in contact with water, emit flammable gases
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Corrosive to Metals

GHS Health Hazards

Health Hazards:

- Acute Toxicity
- Skin Corrosion/Irritation
- Serious Eye Damage/Eye Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity

continued

GHS Health Hazards *continued*

Health Hazards:

- Reproductive Toxicology
- Target Organ Systemic Toxicity – Single Exposure
- Aspiration Toxicity
- Target Organ Systemic Toxicity – Repeated Exposure

GHS Environmental Hazards

New Environmental Hazards:

- Hazardous to the Aquatic Environment
- Acute aquatic toxicity
- Chronic aquatic toxicity
  - Bioaccumulation potential
  - Rapid degradability

Role of the SDS in the GHS

- The SDS* provides comprehensive information about a chemical substance or mixture.
- Primary Use: The Workplace.
- Employers and workers use the SDS as a source of information about hazards and to obtain advice on safety precautions.
- The SDS format will make finding hazard and chemical information easier.

SDS—Formerly known as Material Safety Data Sheets (MSDS)

SDS Format: 16 headings

SDS* is now in a standardized format:

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure control/personal protection

***SDS—Formerly known as Material Safety Data Sheets (MSDS)**

continued

SDS Format: 16 headings *continued*

9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information*
13. Disposal considerations*
14. Transport information*
15. Regulatory information
16. Other information

***Non-mandatory**

SDS Format Example

Appendix B-2
MSDS for Chemical Stuff

GHS SAFETY DATA SHEET

1. Identification

Product Name: Chemical Stuff
Synonyms: Methyltoxy Solution
CAS Number: 000-00-0
Product Use: Organic Synthesis
Manufacturer/Supplier: My Company
Address: My Street, Mytown, TX 00000

General Information: 713-000-0000
Transportation Emergency Number: CHEMTREC: 800-424-9300

2. Hazards Identification

GHS Classification:

Health	Environmental	Physical
Acute Toxicity – Category 2 (inhalation), Category 3 (oral/dermal) Eye Corrosion - Category 1 Skin Corrosion – Category 1 Skin Sensitization – Category 1 Mutagenicity – Category 2 Carcinogenicity – Category 1B Reproductive/Developmental – Category 2 Target Organ Toxicity (Repeated) – Category 2	Aquatic Toxicity – Acute 2	Flammable Liquid – Category 2

GHS Label:

Symbols: flame, skull and crossbones, corrosion, health hazard

Hazard Statements	Precautionary Statements
DANGER! Highly Flammable Liquid and Vapor. Fatal if inhaled. Causes severe skin burns and eye damage. May cause allergic skin reaction. Toxic if swallowed and in contact with skin May cause cancer. Suspected of damaging the unborn child. Suspected of causing genetic defects. May cause damage to cardiovascular, respiratory, nervous, and gastrointestinal systems and liver and blood through prolonged or repeated exposure. Toxic to aquatic life.	Do not eat, drink or use tobacco when using this product. Do not breathe mist/vapors. Keep container tightly closed. Keep away from heat/sparks/open flame. – No smoking. Wear respiratory protection, protective gloves and eye/face protection. Use only in a well-ventilated area. Take precautionary measures against static discharge. Use only non-sparking tools. Store container tightly closed in cool/well-ventilated place. Wash thoroughly after handling.

3. Composition / Information on Ingredients

Component	CAS Number	Weight %
Methyltoxy	000-00-0	80

(See Section 8 for Exposure Limits)

Labeling

Is there a specific GHS label format / layout?

- The actual label format or layout is not specified in the GHS.
- However, there are required label elements.

Label Elements

- Product identifier
- Supplier identifier
- Chemical identity
- Hazard pictograms*
- Signal words*
- Hazard statements*
- Precautionary information

These three elements, all hazard warnings, are required to be located together on the label

Labeling

The standardized label elements included in the GHS are:

- Signal Words
- Hazard Statements
- Symbols (hazard pictograms)

Signal Words

"Danger" or "Warning"

Used to emphasize hazards and indicate relative level of severity of the hazard assigned to a GHS hazard class and category.

Hazard Statements

- Include appropriate statement for each GHS hazard on labels for products that possess more than one hazard.

- Examples of required hazard statements:
  - "Keep away from fire, sparks and heated surfaces"
  - "Do not use in areas without adequate ventilation"
  - "Use CO2, dry chemical, or foam" (for fighting fires)
  - "Wear safety goggles and gloves"

Pictograms

Have been standardized to convey health, physical and environmental hazard information, assigned to a GHS hazard class and category.

Pictograms

Pictograms are required in the revised Hazard Communication Standard. The nine pictograms below are standardized.

Exclamation Mark

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (non-mandatory)

Health Hazard

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

Flame

- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

Gas Cylinder

- Gases Under Pressure

Corrosion

- Skin Corrosion / Burns
- Eye Damage
- Corrosive to Metals

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

Flame over Circle

- Oxidizers

Skull and Crossbones

- Acute Toxicity (fatal or toxic)

Environment (Non-Mandatory)

- Aquatic Toxicity

CHEMICAL X

DANGER

HAZARD STATEMENTS:
Fatal If swallowed.
Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS:

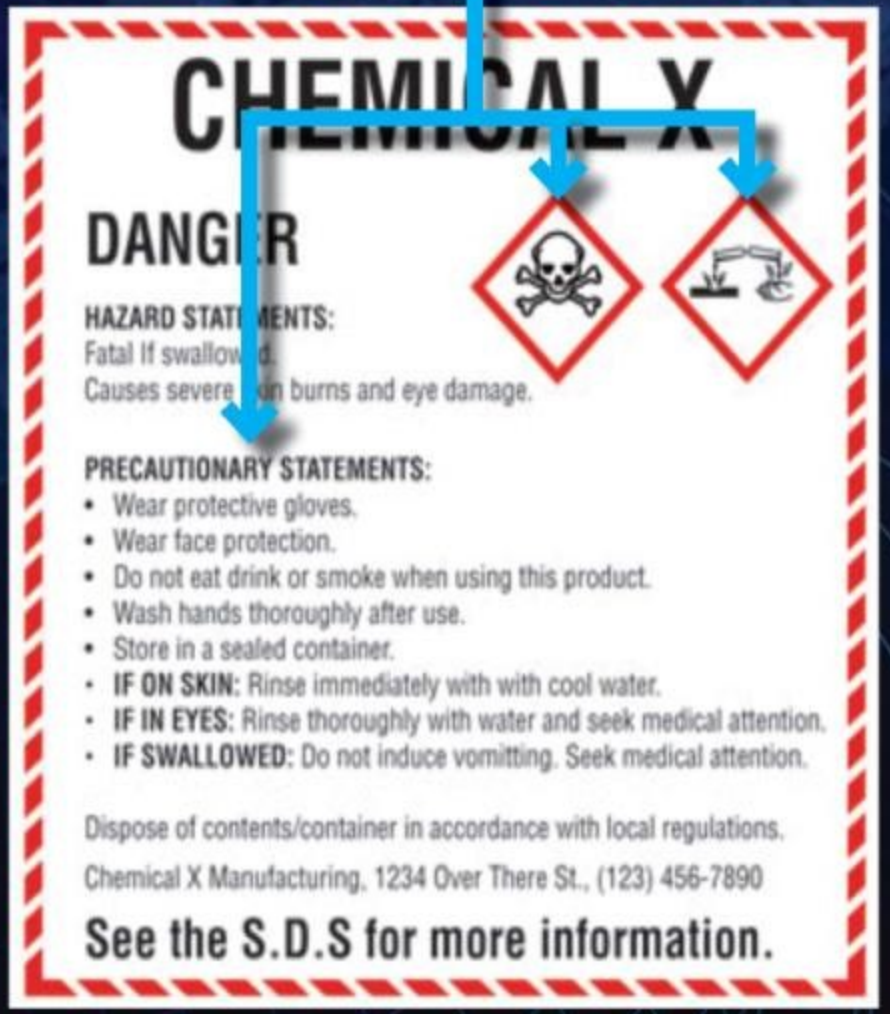
- Wear protective gloves.
- Wear face protection.
- Do not eat drink or smoke when using this product.
- Wash hands thoroughly after use.
- Store in a sealed container.
- **IF ON SKIN:** Rinse immediately with with cool water.
- **IF IN EYES:** Rinse thoroughly with water and seek medical attention.
- **IF SWALLOWED:** Do not induce vomitting. Seek medical attention.

Dispose of contents/container in accordance with local regulations.

Chemical X Manufacturing, 1234 Over There St., (123) 456-7890

See the S.D.S for more information.

Precautionary Statements and Pictograms: Measures to minimize or prevent adverse effects.


CHEMICAL X
DANGER
HAZARD STATEMENTS:
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Causes severe skin burns and eye damage.
PRECAUTIONARY STATEMENTS:
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• Wear face protection.
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• IF IN EYES: Rinse thoroughly with water and seek medical attention.
• IF SWALLOWED: Do not induce vomitting. Seek medical attention.
Dispose of contents/container in accordance with local regulations.
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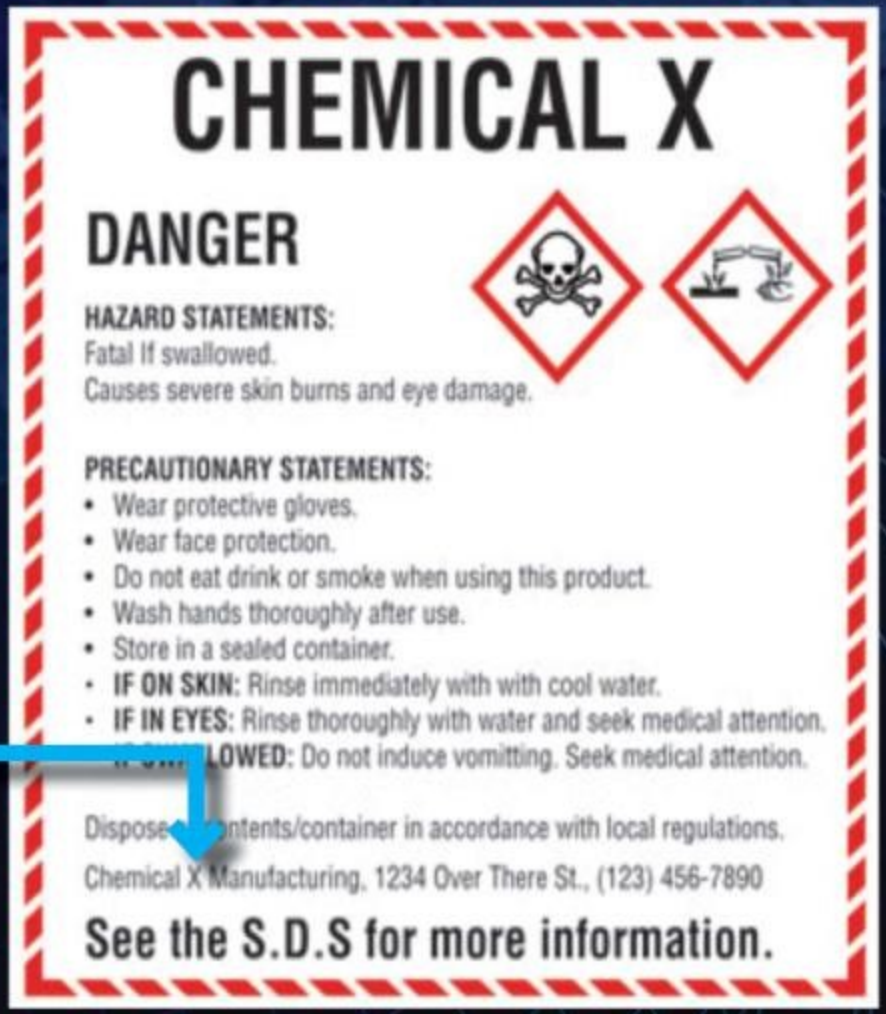
See the S.D.S for more information.

Product Identifier (ingredient disclosure): Name or number used for a hazardous product on a label or in the SDS.

CHEMICAL X
DANGER
HAZARD STATEMENTS:
Fatal If swallowed.
Causes severe skin burns and eye damage.
PRECAUTIONARY STATEMENTS:
• Wear protective gloves.
• Wear face protection.
• Do not eat drink or smoke when using this product.
• Wash hands thoroughly after use.
• Store in a sealed container.
• IF ON SKIN: Rinse immediately with with cool water.
• IF IN EYES: Rinse thoroughly with water and seek medical attention.
• IF SWALLOWED: Do not induce vomitting. Seek medical attention.
Dispose of contents/container in accordance with local regulations.
Chemical X Manufacturing, 1234 Over There St., (123) 456-7890
See the S.D.S for more information.

Supplier identification: The name, address and telephone number should be provided on the label.


CHEMICAL X
DANGER
HAZARD STATEMENTS:
Fatal If swallowed.
Causes severe skin burns and eye damage.
PRECAUTIONARY STATEMENTS:
• Wear protective gloves.
• Wear face protection.
• Do not eat drink or smoke when using this product.
• Wash hands thoroughly after use.
• Store in a sealed container.
• IF ON SKIN: Rinse immediately with with cool water.
• IF IN EYES: Rinse thoroughly with water and seek medical attention.
LOWED: Do not induce vomitting. Seek medical attention.
ntents/container in accordance with local regulations.
Chemical X Manufacturing, 1234 Over There St., (123) 456-7890
See the S.D.S for more information.

CHEMICAL X

DANGER

HAZARD STATEMENTS:
Fatal If swallowed.
Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS:

- Wear protective gloves.
- Wear face protection.
- Do not eat drink or smoke when using this product.
- Wash hands thoroughly after use.
- Store in a sealed container.
- **IF ON SKIN:** Rinse immediately with with cool water.
- **IF IN EYES:** Rinse thoroughly with water and seek medical attention.
- **IF SWALLOWED:** Do not induce vomitting. Seek medical attention.

Dispose of contents/container in accordance with local regulations.

Chemical X Manufacturing, 1234 Over There St., (123) 456-7890

See the S.D.S for more information.

Supplemental information:
non-harmonized information.

New Hazard Information

- Manufacturers, importers, distributors and employers who become newly aware of significant information regarding chemical hazards shall:

  - Revise the labels for the chemical within three (3) months.

  - Revise the SDS for the chemical within three (3) months.

Summary

During this block of instruction we have covered:

- Introduction/Background
- Hazards
- Safety Data Sheets (SDS)
- Labeling

Closing Comments

- OSHA has revised the Hazard Communication Standard to include GHS.
- As is in the current system, workers must be trained on the chemical hazards they may encounter ***before*** they are exposed to, use and/or work with the hazardous chemical(s). There is no grace period for this hazard communication training.
- Prior to December 1, 2013, Army Soldiers, civilians and embedded contractors, must be trained on the new label elements and safety data sheet (SDS) format.

Way Ahead

- We will update our organization's Hazard Communication Program and training to reflect the Globally Harmonized System.
- Until Dec 1, 2015, there will be a transition period where every chemical we receive can have either the current hazardous chemical label and MSDS or the new GHS label and SDS.
- Updates to Army regulations and guidance on alternative workplace labeling to meet GHS compliance is underway.
- By June 2016, all Army organizations will be in full compliance.

Information Sources

- OSHA web page on the GHS: http://www.osha.gov/dsg/hazcom/index.html
- OSHA FACT SHEET : http://www.osha.gov/dsg/hazcom/HCSFactsheet.html
- OSHA's Guide to the GHS Purple Book: http://www.osha.gov/dsg/hazcom/ghs.html
- Globally Harmonized System Of Classification And Labeling of Chemicals (GHS), 4th ed (Purple Book)
- Also, see associated handouts in the Training Support Package.